

Appl. No. 10/019,289
Reply to Office Action of January 23, 2004

Attorney Docket: P67515US0

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1 – 13 (cancelled)

Claim 14 (currently amended): A method for manufacturing a complex shape structural component with an open cross section, preferably U-shaped, or with a closed cross section by assembling at least two simple sheets of metal parts, at least one of said metal parts having an elastic limit of more than 400 MPa, ~~and low formability~~, said method comprising the steps of:

bending one or more metal parts to form one or more flanges by at least one bending process;

arranging the flange or flanges so that the metal parts being relative to each other in a junction section; and

crimping the flange or flanges along the junction section of the metal parts to form one or more curved hems in order to assemble said parts; and

after said hem forming, blocking said hem to prevent the assembled parts from sliding along the junction section by selecting a method chosen from the group consisting of adhesive bonding and imbricating alternate serrated cut-outs made in the two simple sheets of metal parts in a region to be hem-assembled, said cut-outs being made with a press during manufacturing.

Claim 15 (previously presented): The manufacturing method according to Claim 14, wherein at least one of the metal parts is made of steel and has an elastic limit of more than 1000 MPa.

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Claim 16 (previously presented): The manufacturing method according to Claim 14, wherein a ratio of a radius of the hem to a sum of thicknesses of the various parts one wishes to assemble along the junction section is between 2 and 10.

Claim 17 (previously presented): The manufacturing method according to Claim 14, wherein a ratio of difference between a radius of the hem and a thickness of an outermost metal with the thickness of an innermost metal is more than 2.

Claim 18 (previously presented): The manufacturing method according to Claim 14, wherein the nature or thickness of the various parts is not identical.

Claim 19 (previously presented): The manufacturing method according to Claim 14, wherein the junction is not rectilinear and has a local curvature, the radius of which is more than at least five times the external radius of the hem.

Claim 20 (cancelled)

Claim 21 (currently amended): The manufacturing method according to Claim 14, wherein, ~~after said hem crimping, blocking of said hem to prevent the assembled parts from sliding along the junction section is~~ reinforced achieved by locally crushing the hem with a press tool.

Claims 22 – 27 (cancelled)

Claim 28 (currently amended): The manufacturing method according to Claim 14 ~~[[27]]~~, wherein said cut-outs comprise a plurality of teeth separated by a plurality of gaps.

Claim 29 (previously presented): The manufacturing method according to Claim 28, wherein said teeth present a height less than a circumference of the hem as formed, preferably one third of said circumference, and a width slightly less than the width of said gaps between the teeth.

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Claim 30 (previously presented): The manufacturing method according to Claim 28, wherein, during the assembling of said sheet metal parts, the teeth of an innermost part relative to an axis of the hem are imbricated in the gaps of an outermost part relative to said axis.

Claim 31 (currently amended): Product obtained by the manufacturing method described in Claim 14, having at least two simple sheet metal parts in order to create a structural component, at least one said metal part having a very high elastic limit and low formability, wherein the metal parts have been formed by at least a bending process and are arranged with respect to each other along a junction section and are assembled with a curved hem along said junction section, said hem mechanically reinforcing the structure and said formed hem having been blocked to prevent the assembled parts from sliding along the junction section by selecting a method chosen from the group consisting of adhesive bonding and imbricating alternate serrated cut-outs made in the two simple sheets of metal parts in the hem-assembled region, said cut-outs being made with a press during manufacturing.

Claim 32 (previously presented): The product according to Claim 31, wherein a ratio of a radius of the hem to a sum of thicknesses of the various parts that are assembled along the junction section is between 2 and 10.

Claim 33 (previously presented): The product according to Claim 31, wherein a ratio of difference between a hem radius and a thickness of an outermost sheet metal part with a thickness of an innermost sheet metal part is more than 2.

Claim 34 (previously presented): The product according to Claim 31, wherein the product is in the form of a two-web I-shaped girder obtained by assembling four constituent parts connected by four hems along the junction section of the four parts taken in pairs.

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Claim 35 (previously presented): The product according to Claim 31, wherein the product results from assembling two parts by means of two hems so as to form a closed cross section, at least one of the two parts having a U-shaped cross section.